IN THE CLAIMS:

Please cancel the following claims:

1. (Canceled) ~~A modular, narrow band, high repetition rate ultraviolet laser light source for providing light in the form of laser output light pulses to a light receiving location in a production line machine comprising:~~

~~A) a laser unit comprising:~~

~~1) a discharge chamber containing;~~

~~a) a laser gas and~~

~~b) a pair of elongated spaced apart electrodes defining a discharge region in which the laser gas is discharged, each discharge producing a laser output light pulse,~~

~~2) a gas circulation means for producing sufficient gas movement of the laser gas in discharge region to clear from the discharge region, following each laser gas discharge, substantially all discharge produced ions prior to a next discharge when operating at a laser output light pulse repetition rate in the range of 2,000 laser output light pulses per second or greater,~~

~~3) a heat exchanger system capable of removing heat energy from the laser gas, so as to maintain laser gas temperature within a desired range, and~~

~~4) a pulse power system providing electrical pulses to the pair of electrodes sufficient to produce laser output light pulses at rates of about 2,000 pulses per second or greater with precisely controlled pulse energies in excess of about 5 mJ, and;~~

~~B) a beam delivery unit comprising a beam path enclosure structure providing a laser output light pulse beam path, from a laser beam output port located on said laser unit to a remote laser beam output port at a terminus of said beam delivery unit;~~

~~C) the beam path enclosure unit have at lease one first beam transition section oriented in the direction of the output laser light beam entering the at least one first beam transiting section, and at least one second beam transition section oriented orthogonaly to the at least one first beam transition section forming a junction of the at least one first beam transition section and the at least one second beam transition section;~~

~~D) a first turning mirror located at the junction and positioned at an angle to the output laser light pulse beam transiting the at least one first transition section, at substantially Brewster's angle and with the primary polarization direction of the laser output light pulse beam substantially within the plane of incidence of the laser output light pulse beam on the first turning mirror, creating a reflected laser output light pulse bean transiting the at least one second beam transition portion;~~

~~E) a second turning mirror located at a terminus of the at least one second beam transition section and positioned at an angle to the reflected laser output light pulse beam transiting the at least one second transition section, at substantially Brewster's angle and with the primary polarization direction of the reflected laser output light pulse beam substantially within the plane of incidence of the reflected laser output light pulse beam on the first turning mirror.~~

2. (Canceled) ~~A light source as in Claim 1 wherein said repetition rate is in the range of 4,000 Hz or greater and said rate of laser pulses is 4000 Hz or greater.~~

3. (Canceled) ~~A light source as in Claim 2 wherein said source further comprises a second discharge chamber and said first and second discharge chambers are configured in a MOPA configuration.~~

4. (Canceled) ~~A light source as in Claim 3 and further comprising a pulse stretched for increasing laser pulse duration.~~

5. (Canceled) ~~A light source as in Claim 4 wherein said pulse duration is increased by at least a factor of 2.~~

6. (Canceled) ~~A light source as in Claim 1 wherein said beam delivery unit comprises isolation shutter units for isolating portions of said beam path to permit service of optical component while maintaining other portions of the beam path in a substantially contamination free state.~~

7. (Canceled) ~~A light source as in Claim 1 and further comprising a profile flipping coherence scrambler.~~

8. (Canceled) ~~A very narrow band two chamber high repetition rate gas discharge laser system comprising:~~

~~A) a first laser unit comprising:~~

~~1) a first discharge chamber containing;~~

~~c) a first laser gas and~~

~~d) a first pair of elongated spaced apart electrodes defining a first discharge region,~~

~~2) a first fan for producing sufficient gas velocities of said first laser gas in said first discharge region to clear from said first discharge region, following each pulse, substantially all discharge produced ions prior to a next pulse when operating at a repetition rate in the range of 4,000 pulses per second or greater,~~

~~3) a first heat exchanger system capable of removing at least 16 kw of heat energy from said first laser gas,~~

~~4) a line narrowing unit for narrowing spectral bandwidths of light pulses produced in said first discharge chamber;~~

~~B) a second discharge chamber comprising:~~

~~1) a second laser gas,~~

~~2) a second pair of elongated spaced apart electrodes defining a second discharge region~~

~~3) a second fan for producing sufficient gas velocities of said second laser gas in said second discharge region to clear from said second discharge region, following each pulse, substantially all discharge produced ions prior to a next pulse when operating at a repetition rate in the range of 4,000 pulses per second or greater,~~

~~4) a second heat exchanger system capable of removing at least 16 kw of heat energy from said second laser gas;~~

~~C) a pulse power system configured to provide electrical pulses to said first pair of electrodes and to said second pair of electrodes sufficient to produce laser pulses at rates of about 4,000 pulses per second with precisely controlled pulse energies in excess of about 5 mJ; and~~

~~D) a pulse stretcher for increasing laser pulse duration of said laser pulses in said amplified output beam;~~

~~E) relay optics for directing laser beams produced in said first laser unit through said second discharge chamber to produce an amplified output beam;~~

~~F) a beam delivery unit comprising a beam path enclosure structure providing a laser beam path from said pulse stretches to a laser beam input port at said lithography machine; and~~

~~G) a laser beam measurement and control system for measuring pulse energy, wavelength and bandwidth of laser output pulses produced by said two chamber laser system and controlling said laser output pulses in a feedback control arrangement.~~

9. (Canceled) ~~A laser as in Claim 8 and further comprising a purge means for purging said beam delivery unit with nitrogen.~~

10. (Canceled) ~~A light source as in Claim 8 wherein said beam delivery unit is also comprises a plurality of beam path isolation shutter units for isolating portions of said beam path to permit service of optical components while maintaining other portions of the beam path in a substantially contamination free state.~~

11. (Canceled) ~~A light source as in Claim 8 wherein said beam delivery unit comprises mirrors positioned to provide s-polarization reflection of about 97 percent of laser beam.~~

12. (Canceled) ~~A light source as in Claim 8 wherein said beam delivery unit comprises two prisms configured to change directions of the laser beam by about 90 degrees.~~

13. (Canceled) ~~A light source as in Claim 8 wherein a combined beam path is defined by combined paths of laser beams produced in said first laser unit, directed by said relay optics, amplified in said second laser unit, pulse stretched in said pulse stretcher and delivered by said beam delivery unit, and further comprising beam path enclosure components for enclosing all otherwise exposed portions of said beam path.~~

14. (Canceled) ~~A light source as in Claim 13 and further comprising a purge system for purging with one or more purge gases all portions of said beam path not enclosed in a sealed structure.~~

15. (Canceled) ~~A light source as in Claim 8 wherein said relay optics are configured to provide two pulses of output pulses from said first laser unit through said second discharge chamber.~~

16. (Canceled) ~~A light source as in Claim 8 and further comprising a profile flipping coherence scrambler.~~

17. (Canceled) ~~A light source as in Claim 8 wherein said relay optics comprise at least one total internal reflection prism.~~

18. (Canceled) ~~A light source as in Claim 8 wherein said relay optics comprise at least one single reflection total internal reflection prism and at least one two reflection total internal reflection prism~~.

19. (Canceled) ~~A light source as in Claim 8 wherein said relay optics comprises a beam reversing module for reversing a laser beam after a single pass throught he power amplifier for a second pass through the power amplifier wherein said beam reversing module comprises a two reflection total internal reflection prism.~~

20. (Canceled) ~~A narrow band, high repetition rate ultraviolet laser light source for providing light in the form of laser output light pulses to a light receiving location in a production line machine comprising:~~

~~a laser unit producing a laser output light pulse beam;~~

~~a beam delivery unit comprising a beam path enclosure structure providing a laser output light pulse beam path, from a laser beam output port located on said laser unit to a remote laser beam output port at a terminus of said beam delivery unit;~~

~~the beam path enclosure unit have at lease one first beam transition section oriented in the direction of the output laser light beam entering the at least one first beam transiting section, and at least one second beam transition section oriented orthogonaly to the at least one first beam transition section forming a junction of the at least one first beam transition section and the at least one second beam transition section;~~

~~a first turning mirror located at the junction and positioned at an angle to the output laser light pulse beam transiting the at least one first transition section, at substantially Brewster's angle and with the primary polarization direction of the laser output light pulse beam substantially within the plane of~~

~~incidence of the laser output light pulse beam on the first turning mirror, creating a reflected laser output light pulse bean transiting the at least one second beam transition portion;~~

~~a second turning mirror located at a terminus of the at least one second beam transition section and positioned at an angle to the reflected laser output light pulse beam transiting the at least one second transition section, at substantially Brewster's angle and with the primary polarization direction of the reflected laser output light pulse beam substantially within the plane of incidence of the reflected laser output light pulse beam on the first turning mirror.~~

Please add the following new claims:

21.(New) A delivery module for delivering a laser beam utilized in a manufacturing process from the output of a gas discharge laser to the input of a manufacturing tool utilizing the laser light comprising:

at least three laser beam travel paths providing for at least two changes in direction of the travel of the laser beam;

an enclosure enclosing the beam travel paths and sealing the beam paths from the surrounding environment;

at least two optical elements effecting the at least two changes in direction of the travel of the laser beam;

at least one of the at least two optical elements is an automated optical element having an automated positioner to select the change in direction of the laser light beam effected by the automated optical element;

a delivery unit laser light inlet port receiving a laser beam output of the laser;

a delivery unit laser light outlet port discharging the laser beam to a manufacturing tool light inlet port;

a beam analysis module, located in the delivery unit close to the delivery unit light outlet port, containing measuring equipment for measuring at least one of the beam pulse energy on a pulse by pulse basis and beam pointing and beam position and for providing an output control signal to the laser and to the automated optical element.

22. (New) The apparatus of claim 1 further comprising:

a beam pulse stretcher in at least one of the beam travel paths.

23. (New) The apparatus of claim 1, further comprising:

at least one of the at least two optical elements is a fixed optical element having an orientation mechanism operable from outside the enclosure to select the change in direction of the laser beam effected by the fixed optical element.

24. (New) The apparatus of claim 2, further comprising:

at least one of the at least two optical elements is a fixed optical element having an orientation mechanism operable from outside the enclosure to select the change in direction of the laser beam effected by the fixed optical element.

25. (New) The apparatus of claim 1 further comprising:

the enclosure including beam analysis equipment comprising a target and beam directors incorporated on a moveable mounting which is insertable in the laser beam path for beam diagnostic purposes and removable from the beam path during normal operation.

26. (New) The apparatus of claim 2 further comprising:

the enclosure including beam analysis equipment comprising a target and beam directors incorporated on a moveable mounting which is insertable in the laser beam path for beam diagnostic purposes and removable from the beam path during normal operation.

27. (New) The apparatus of claim 3 further comprising:

the enclosure including beam analysis equipment comprising a target and beam directors incorporated on a moveable mounting which is insertable in the laser beam path for beam diagnostic purposes and removable from the beam path during normal operation.

28. (New) The apparatus of claim 4 further comprising:

the enclosure including beam analysis equipment comprising a target and beam directors incorporated on a moveable mounting which is insertable in the laser beam path for beam diagnostic purposes and removable from the beam path during normal operation.

29. (New) The apparatus of claim 5 further comprising:

the enclosure is purged.

30. (New) The apparatus of claim 6 further comprising:

the enclosure is purged.

31. (New) The apparatus of claim 7 further comprising:

the enclosure is purged.

32. (New) The apparatus of claim 8 further comprising:

the enclosure is purged.

33. (New) The apparatus of claim 9 further comprising:

the fixed optical element is equipped with a turning wrench extending through the enclosure and sealingly engaging the enclosure such that movement of the fixed optical element can be effected without exposing the beam path inside of the enclosure to the external environment.

34. (New) The apparatus of claim 10 further comprising:

the fixed optical element is equipped with a turning wrench extending through the enclosure and sealingly engaging the enclosure such that movement of the fixed optical element can be effected without exposing the beam path inside of the enclosure to the external environment.

35. (New) The apparatus of claim 11 further comprising:

the fixed optical element is equipped with a turning wrench extending through the enclosure and sealingly engaging the enclosure such that movement of the fixed optical

element can be effected without exposing the beam path inside of the enclosure to the external environment.

36. (New) The apparatus of claim 12 further comprising:

the fixed optical element is equipped with a turning wrench extending through the enclosure and sealingly engaging the enclosure such that movement of the fixed optical element can be effected without exposing the beam path inside of the enclosure to the external environment.

37. (New) The apparatus of claim 13 further comprising:

the automated optical element is controlled in tip and tilt based upon a signal provided by the beam analysis module from the group of the beam pointing and beam position output signals of the beam analysis module.

38. (New) The apparatus of claim 14 further comprising:

the automated optical element is controlled in tip and tilt based upon a signal provided by the beam analysis module from the group of the beam pointing and beam position output signals of the beam analysis module.

39. (New) The apparatus of claim 15 further comprising:

the automated optical element is controlled in tip and tilt based upon a signal provided by the beam analysis module from the group of the beam pointing and beam position output signals of the beam analysis module.

40. (New) The apparatus of claim 16 further comprising:

the automated optical element is controlled in tip and tilt based upon a signal provided by the beam analysis module from the group of the beam pointing and beam position output signals of the beam analysis module.

41. (New) The apparatus of claim 17 further comprising:

the enclosure comprises at least two shutter elements insertable into the enclosure on either side of an optical element to maintain the seal of the enclosure on the side of the respective shutter element away from the optical element during maintenance on or replacement of the optical element.

42. (New) The apparatus of claim 18 further comprising:

the enclosure comprises at least two shutter elements insertable into the enclosure on either side of an optical element to maintain the seal of the enclosure on the side of the respective shutter element away from the optical element during maintenance on or replacement of the optical element.

43. (New) The apparatus of claim 19 further comprising:

the enclosure comprises at least two shutter elements insertable into the enclosure on either side of an optical element to maintain the seal of the enclosure on the side of the respective shutter element away from the optical element during maintenance on or replacement of the optical element.

44. (New) The apparatus of claim 20 further comprising:

the enclosure comprises at least two shutter elements insertable into the enclosure on either side of an optical element to maintain the seal of the enclosure on the side of the respective shutter element away from the optical element during maintenance on or replacement of the optical element.

45. (New) The apparatus of claim 1 further comprising:

a beam pulse stretcher in at least one of the three beam travel paths, the pulse stretcher comprising:

a beam splitter in the at least one of the beam travel paths passing a selected percentage x% of the laser beam along the beam travel axis of the at least one of the three beam travel paths and reflecting (100 – x)% into a beam optical delay path;

the beam optical delay returning the beam to the beam splitter as a first delayed beam;

the beam splitter reflecting (100 – x)% of the first delayed beam along the beam travel axis and passing x% of the first delayed beam into the optical delay path as a second delayed beam.

46. (New) The apparatus of claim 25 further comprising:

the optical delay path comprising:

at least one focusing optic in the optical delay path.

47. (New) A delivery module for delivering a laser light pulse utilized in a manufacturing process from the output of a gas discharge laser to the input of a manufacturing tool utilizing the laser light comprising:

a beam delivery unit comprising a beam path enclosure structure providing a laser output light pulse beam path, from a laser beam output port located on said laser to a remote laser beam output port at a terminus of said beam delivery unit;

the beam path enclosure unit having at least one first beam transition section oriented in the direction of the output laser light pulse beam entering the at least one first beam transiting section, and at least one second beam transition section oriented in a different direction from the at least one first beam transition section forming a junction of the at least one first beam transition section and the at least one second beam transition section;

a first turning optic located at the junction and positioned at an angle to the output laser light pulse beam transiting the at least one first transition section, creating a first redirected laser output light pulse beam transiting the at least one second beam transition portion;

a second turning optic located at a terminus of the at least one second beam transition section and positioned to the redirect the first redirected laser output light pulse beam transiting the at least one second transition section,

creating a second redirected laser output light pulse beam transiting in the at least one second transition section;

at least one of the first and second turning optics is an automated turning optic having an automated positioner to select the change in direction of the laser output light pulse beam incident upon the automated turning optic;

a delivery module laser output light pulse beam inlet port receiving a laser output light pulse beam from the laser;

a delivery module laser output light pulse beam outlet port discharging the laser output light pulse beam to a manufacturing tool light inlet port;

a beam analysis module, located in the delivery module close to the delivery module outlet port, containing measuring equipment for measuring at least one of the beam pulse energy, on a pulse by pulse basis, and beam direction, and for providing an output control signal to the laser and to the automated turning optic.

48. (New) The apparatus of claim 28, further comprising:

a beam pulse stretcher in the delivery module.